

000192

09/998,860

REMARKS

Claims 31-33 are pending in the application.

Claims 31-33 stand rejected under 35 USC 103(a) as being unpatentable over Katz (US Patent No. 6,731,954) in view of Padovani et al. (US Patent No. 6,751,206). The applicant traverses the examiner's rejection, and amends claims 31-33 to further distinguish the claims over the cited references, and to provide proper antecedent basis.

Applicant traverses the examiner's rejection, assuming no amendment to claims 31-33.

The examiner asserts that Katz teaches "providing a mobile station's position to a spatial processing unit (232) (col. 5, lines 28-45; col. 3, lines 55-67; and FIG. 3)."

At col. 5, lines 28-45, Katz teaches, for example, that "the base station system 126 knows in which direction the subscriber terminal 150 is located (known as Direction of Arrival)."
The direction the subscriber terminal 150 may be determined using a "known framing sequence" (GSM), "a received pilot signal" (CDMA), "blind estimating" (without known signal parts, based on "the direction from which the strongest signal is received"). "... the direction is expressed e.g. as an angle 302 with respect to the geographical west-east axis 300." Katz does use the word "located" at col. 5, line 29, and the word "locate" at col. 5, line 39. However, Katz uses these two words in the context of determining (i.e., locating) the direction of the subscriber terminal 150.

At col. 3, lines 55-67, Katz teaches, for example, "Hence, the direction of the subscriber terminal 150 is expressed as a complex vector which is formed by elementary units corresponding to each antenna element 112A, 112B and usually expressed as complex numbers."

In FIG. 3, Katz shows a subscriber terminal 150 moving in a direction relative to a base station 112 along an angle 302 with respect to the geographical west-east axis 300, as described in the corresponding description.

By contrast, claims 31-33 claim, in part, "providing a mobile station's position to a spatial processing unit." The applicant submits that the claimed feature "mobile station's position" is not the same as Katz's "direction of the subscriber terminal 150." In other words, the applicant submits that the claimed word "position" does not have the same meaning as Katz's term "direction." Katz's term "direction" merely describes an angle between Katz's subscriber terminal 150 and the base station 112 "with respect to the geographical west-east axis 300," and,

000192

09/998,860

for example, is independent of a distance between Katz's subscriber terminal 150 and the base station 112.

Katz determines the direction of the subscriber terminal 150, without knowledge of the position of the subscriber terminal 150 or the position of the base station 112 (see, for example, col. 5, lines 27-46). Therefore, claims 31-33 are patentably distinguishable over Katz.

In the applicant's last response dated November 4, 2004, the applicant responded that the claimed word "position" does not have the same meaning as Katz's term "direction." However, the examiner maintained the rejection that Katz teaches "providing a mobile station's position to a spatial processing unit (232) (col. 5, lines 28-45; col. 3, lines 55-67; and FIG. 3)," without providing the applicant any reply or comment to the applicant's response. If the examiner chooses to maintain this rejection, the applicant respectfully requests that the examiner to provide the applicant with a reply to the applicant's response, including particularly identifying in Katz support for the "mobile station's position."

Accordingly, the rejection of claims 31-33 under 35 USC 103(a) should be withdrawn.

The examiner asserts that Katz teaches "calculating direction of the mobile station with respect to the base station (col. 6, lines 27-51)."

At col. 6, lines 27-51, Katz teaches, for example, forming the "direction of transmission" (DoT). Nowhere at col. 6, lines 27-51, does Katz teach: "calculating the direction of the mobile station with respect to the base station." However, Katz does teach determining "the direction of the subscriber terminal 150" at, for example, col. 3, line 45 – col. 4, line 31.

By contrast, claims 31-33 recite: "calculating a direction of the mobile station with respect to the base station according to the mobile station's position and the base station's position" (emphasis added). The examiner must consider every feature of the claimed invention in the examiner's rejection. Nowhere does Katz teach this feature, including the underlined portion. Therefore, claims 31-33 are patentably distinguishable over Katz, and the rejection of claims 31-33 under 35 USC 103(a) should be withdrawn.

The examiner asserts that Katz teaches "a database record for the mobile station's position and angle of arrival (col. 5, line 51 – col. 6, line 12, and FIG. 3)."

At col. 5, lines 49-57, Katz teaches: "A direction of transmission 308, which is used in the transmission for directing the antenna beam 304 and which is formed on the basis of the

000192

09/998,860

direction of arrival 302, is based on outdated information about the location of the subscriber terminal 150. Previous directions of arrival can also be utilized in calculating a new direction of transmission taking account of the predetermined number of previously formed directions of arrival.” (emphasis added)

By contrast, claims 31-33 each claim, in part, “calculating a number and a direction of beams according to information supplied by a multipath database that includes records of mobile station's position and corresponding angle of arrival of energy.” The examiner must consider every feature of the claimed invention in the examiner's rejection. Nowhere does Katz teach this feature, including the underlined portion. For example, Katz does not teach any database that includes “records of mobile station's position” or “records of mobile station's position and corresponding angle of arrival of energy.”

Katz teaches: “In the formula, N is the number of subscriber terminals (150). In Formula 1, the direction of transmission DoT.sub.i of the i.sup.th subscriber terminal 150 is formed by calculating the weighted average of the previous directions of arrival DoA.sub.i of the i.sup.th subscriber terminal 150.” (col. 6, lines 40-44) However, as the examiner noted, Katz does not teach: “calculating a number of beams.” Further, Katz's teaching of calculating the “direction of transmission (DoT)” based on “previous directions of arrival DoA,” does not include the claimed “corresponding mobile station position.” Hence, a comparison of Katz's formula 1 to the claims reinforces the fact that Katz uses “previous directions of arrival DoA,” but not the claimed “corresponding mobile station position.” Therefore, claims 31-33 are patentably distinguishable over Katz, and the rejection of claims 31-33 under 35 USC 103(a) should be withdrawn.

The examiner asserts that Katz teaches “determining a phase of each element of an antenna according to the number and direction of beams (col. 3, lines 50-67).” At col. 3, lines 50-67, Katz teaches a receiver 200 for receiving multipath-propogated signals presented in complex form. By contrast, claims 31-33 claim “determining a gain and a phase of each element of an antenna according to the number and direction of beams.” Therefore, the examiner did not reject the feature of “determining a gain of each element of an antenna.” Further, Katz does not teach or suggest that making its determination “according to the number and direction of beams,” as claimed in claims 31-33. Therefore, the examiner's rejection under 35 USC 103(a) should be withdrawn or restated with proper support.

000192

09/998,860

The examiner admits that Katz does not disclose providing “a base station’s position.” However, the examiner does not assert that Padovani discloses providing “a base station’s position.” Therefore, the rejection under 35 USC 103(a) is improper because the examiner has not stated a basis for rejecting the claimed feature “providing a base station’s position” in either of the cited references, either alone or in combination with other features of claims 31-33. Therefore, the examiner’s rejection under 35 USC 103(a) should be withdrawn or restated with proper support.

The examiner asserts that Padovani teaches “a base station with antenna array and beam forming and calculates the number (odd or even beams) and steers to mobile station (216) (see figure 2).” However, Padovani teaches that the sub-sector transmission beams 208, 210, 212, and 214 remain fixed regardless of the location of the subscriber station 216 within the sector. (col. 5, lines 40-52). Further, Padovani teaches that the base station transmits at a fixed power level. (col. 5, line 64) Therefore, the examiner’s assertion that Padovani teaches “steers to mobile station (216)” is opposite that of Padovani teaching. Therefore, the examiner’s rejection under 35 USC 103(a) should be withdrawn or restated with proper support.

Applicant amends claims 31-33 to further distinguish the claims over the cited references.

The applicant amends claims 31-33 to further define “position” as “coordinate position” for each of the “mobile station” and the “base station.”

Support for this amendment may be found, for example, in the present specification on page 8, par. 38 (e.g., “GPS coordinate data” and “beamforming coordinate data”). Note that the specification, at par 38, also states that various techniques may be used to determine the position of each of the mobile station and the base station, and are not limited to the teachings of the present application (e.g., GPS technique). Therefore, the claim term “coordinate” is meant to further distinguish the claimed invention over Katz’s “angle of direction,” and is not meant to be limited to any particular method (e.g., GPS) of determining the position of the mobile station or the position of the base station.

The applicant also amends claims 31-33 to provide for proper antecedent basis.

The applicant submits that no new matter has been added by the amendments to claims

000192

09/998,860

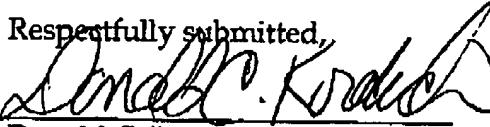
31-33.

In view of the foregoing, Applicant submits that all pending claims are in condition for allowance. Applicant respectfully requests the reconsideration and reexamination of this application and the timely allowance of the pending claims. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

If there are any other fees due in connection with the filing of the response, please charge the fees to our Deposit Account No. 17-0026. If a fee is required for an extension of time under 37 CFR 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Applicants therefore respectfully request that a timely Notice of Allowance be issued in this case.

Dated: October 17, 2005

Respectfully submitted,
By: 
Donald C. Kordich
Attorney for Applicant
Registration No. 38,213

QUALCOMM Incorporated
5775 Morehouse Drive
San Diego, California 92121-2779
Telephone: (858) 658-5928
Facsimile: (858) 658-2502